

CLAIMS

5 1. A method for producing isotransgenic plant lines, comprising the following steps of:

a) transforming the plant cells of a plant hybrid consisting of the crossing of two parental lines, a line of interest and a line suited to transformation, with a vector carrying a T-DNA containing a transgene;

10 b) selecting the hybrid primary transformants which have integrated said T-DNA only, into the genome of the line of interest;

15 c) backcrossing, with the parental line of interest, said primary transformants selected in b), and selecting the individuals derived from these backcrosses until isotransgenic lines are produced.

20 2. The method as claimed in claim 1, characterized in that the step for selecting the hybrid primary transformants consists in identifying the genomic sequences adjacent to the T-DNA inserted, in order to determine the parent genome which has received said T-DNA.

25 3. The method as claimed in claim 2, in which the determination of the parent genome which has received said T-DNA, using said genomic sequences

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a2  
adjacent to the T-DNA, is carried out according to an  
RFLP technique or a sequencing method.

4. The method as claimed in one of claims 1  
to 3, in which the individuals in which the chromosome  
5 which has received the T-DNA has conserved a genotype  
entirely of the line of interest type, and which have a  
genome of interest to entire genome ratio of at least  
75%, are selected from the first backcross in c).

5. The method as claimed in one of the  
10 preceding claims, characterized in that it comprises a  
subsequent step of crossing between the isotransgenic  
line according to the invention and another line of  
interest, in particular another isotransgenic line  
containing a different transgene, for producing a  
15 hybrid line.

6. The method as claimed in one of the  
preceding claims, characterized in that the plant cells  
originate from a large crop species chosen from maize,  
wheat, rapeseed, sunflower, pea, soybean and barley, or  
20 from a vegetable or floral species.

7. The method as claimed in one of the  
preceding claims, characterized in that the T-DNA  
comprises in particular a nucleotide sequence encoding  
a protein which confers agronomic properties and/or  
25 properties of resistance to diseases.

8. The method as claimed in one of the  
preceding claims, characterized in that the

isotransgenic lines produced are commercial elite lines.

9. The use of the method as claimed in one of claims 1 to 8, characterized in that it allows the introgression of several transgenic characteristics into a plant, without adding fragments linked to the transgene which may be the subject of a genetic burden.

10. A method which makes it possible to target the parent genome which has received a T-DNA after transformation of a hybrid, comprising the identification of the genomic sequences adjacent to the T-DNA inserted.

11. A transgenic plant or part of a plant, in particular seed, obtained according to the invention in one or other of the steps described in claim 1 or 5.

12. A true isotransgenic line produced from hybrid transformants as claimed in one of claims 1 to 7, characterized in that they have a fixed pure line of interest genotype over the entire genome and have stably integrated the T-DNA containing the transgene.

13. A commercial hybrid produced according to the method described in claim 5.